

Application No. 10/972,203  
Amendment dated April 14, 2005  
Page 2

**Amendments to the Claims:**

The following claims will replace all prior versions of the claims in this application (in the unlikely event that no claims follow herein, the previously pending claims will remain):

1. (Currently amended) A radiation-curable composition comprising:
  - (a) an acrylate oligomer having a ~~polytetramethylene glycol~~ polyether backbone;
  - (b) an acrylate monomer; and
  - (c) at least three photoinitiators.
2. (Original) The radiation-curable composition of claim 1, wherein said acrylate monomer is propoxylated nonyl phenol acrylate.
3. (Original) The radiation-curable composition of claim 1, wherein said oligomer is derived from:
  - (i) one or more polytetramethylene glycols;
  - (ii) isophorone diisocyanate, dicyclohexylmethane diisocyanate, and/or the trimer of hexamethylene diisocyanate; and
  - (iii) hydroxyethylacrylate.
4. (Original) The radiation-curable composition of claim 3, wherein said oligomer has a molecular weight in the range of 2,000-6,000 g/mol.
5. (Original) The radiation-curable composition of claim 1, wherein said oligomer is derived from, relative to the total weight of the oligomer:
  - (i) 10-30 wt% of isophorone diisocyanate;
  - (ii) 5-15 wt% of dicyclohexylmethane diisocyanate;
  - (iii) 45-75 wt% of polytetramethylene glycol; and
  - (iv) 5-20 wt% of hydroxyethylacrylate.

Application No. 10/972,203  
Amendment dated April 14, 2005  
Page 3

6. (Original) The radiation-curable composition of claim 2, wherein said oligomer is derived from, relative to the total weight of the oligomer:
- (i) 10-30 wt% of isophorone diisocyanate;
  - (ii) 5-15 wt% of dicyclohexylmethane diisocyanate;
  - (iii) 45-75 wt% of polytetramethylene glycol; and
  - (iv) 5-20 wt% of hydroxyethylacrylate.
7. (Original) The radiation-curable composition of claim 1, wherein said acrylate monomer is hexane diol diacrylate.
8. (Original) The radiation-curable composition of claim 1, wherein said oligomer is derived from:
- (i) one or more polytetramethylene glycols;
  - (ii) isophorone diisocyanate and/or dicyclohexylmethane diisocyanate;
  - (iii) hydroxyethylacrylate; and
  - (iv) optionally, hexane diol and adipic acid.
9. (Original) The composition of claim 8, wherein said oligomer has a molecular weight of 1,000-5,000 g/mol.
10. (Original) The radiation-curable composition of claim 1, wherein said oligomer is derived from, relative to the weight of the oligomer:
- (i) 25-35 wt% of isophorone diisocyanate and/or dicyclohexylmethane diisocyanate;
  - (ii) 25-40 wt% of polytetramethylene glycol;
  - (iii) 15-30 wt% of hydroxyethylacrylate;
  - (iv) 5-15 wt% of hexane diol; and
  - (v) 5-15 wt% of adipic acid.
11. (Original) The radiation-curable composition of claim 7, wherein said oligomer is derived from, relative to the weight of the oligomer:
- (i) 25-35 wt% of isophorone diisocyanate and/or dicyclohexylmethane diisocyanate;

Application No. 10/972,203  
Amendment dated April 14, 2005  
Page 4

- (ii) 25-40 wt% of polytetramethylene glycol;
- (iii) 15-30 wt% of hydroxyethylacrylate;
- (iv) 5-15 wt% of hexane diol; and
- (v) 5-15 wt% of adipic acid.

12. (Original) The radiation-curable composition of claim 1, wherein said composition further comprises a silane coupling agent.

13. (Original) The radiation-curable composition of claim 1, wherein said radiation-curable composition, when cured at a dose of about  $4.4 \text{ mJ/cm}^2$ , has a percentage reacted acrylate unsaturation of at least 56%.

14. (Original) The radiation-curable composition of claim 1, wherein said radiation-curable composition, when cured at a dose of about  $4.4 \text{ mJ/cm}^2$ , has a percentage reacted acrylate unsaturation of at least 60%.

15. (Original) The radiation-curable composition of claim 1, wherein said radiation-curable composition, when cured at a dose of about  $4.4 \text{ mJ/cm}^2$ , has a percentage reacted acrylate unsaturation of at least 66%.

16. (Previously presented) The radiation-curable composition of claim 1, wherein said radiation-curable composition cures faster than a comparable composition, said comparable composition being substantially identical to said radiation-curable composition except that said at least three photoinitiators in said radiation-curable composition have been replaced in said comparable composition with an equal or greater weight amount of 1-hydroxy-cyclohexyl-phenyl ketone photoinitiator.

17. (Original) The radiation-curable composition of claim 16, wherein said at least three photoinitiators include 1-hydroxy-cyclohexyl-phenyl ketone.

Application No. 10/972,203  
Amendment dated April 14, 2005  
Page 5

18. (Original) The radiation-curable composition of claim 1, wherein said oligomer comprises an aromatic group.

19. (Original) The radiation-curable composition of claim 1, wherein said oligomer is an aliphatic oligomer.

20. (Original) The radiation-curable composition of claim 3, wherein said composition is an inner primary coating composition for optical fibers.

21. (Original) A radiation curable composition comprising:

(a) an oligomer derived from, relative to the weight of the oligomer:

- (i) 10-30 wt% of isophorone diisocyanate;
- (ii) 5-15 wt% of dicyclohexylmethane diisocyanate;
- (iii) 45-75 wt% of polytetramethylene glycol; and
- (iv) 5-20 wt% of hydroxyethylacrylate;

(b) an alkoxylated alkyl substituted phenol acrylate;

(c) a photoinitiator; and

(d) a silane coupling agent;

wherein said composition, when cured at a dose of about 4.4 mJ/cm<sup>2</sup>, has a percentage reacted acrylate unsaturation of at least 60%.

22. (Original) The radiation-curable composition of claim 21, wherein said radiation-curable composition, when cured at a dose of about 4.4 mJ/cm<sup>2</sup>, has a percentage reacted acrylate unsaturation of at least 66%.

Application No. 10/972,203  
Amendment dated April 14, 2005  
Page 6

23. (Previously presented) A radiation curable composition comprising:

- (a) an oligomer derived from
  - (i) one or more polytetramethylene glycols;
  - (ii) isophorone diisocyanate and/or dicyclohexylmethane diisocyanate;
  - (iii) hydroxyethylacrylate; and
  - (iv) hexane diol and adipic acid;
- (b) hexanediol di(meth)acrylate; and
- (c) a photoinitiator;

wherein said radiation-curable composition, when cured at a dose of about 4.4 mJ/cm<sup>2</sup>, has a percentage reacted acrylate unsaturation of at least 56%.

24. (Original) The composition of claim 23, further comprising a polydimethyl siloxane compound.

25. (Original) The composition of claim 23, wherein said oligomer is derived from, relative to the total weight of said oligomer:

- (i) 25-35 wt% of isophorone diisocyanate and/or dicyclohexylmethane diisocyanate;
- (ii) 25-40 wt% of polytetramethylene glycol;
- (iii) 15-30 wt% of hydroxyethylacrylate;
- (iv) 5-15 wt% of hexane diol; and
- (v) 5-15 wt% of adipic acid.

26. (Original) The radiation-curable composition of claim 23, wherein said radiation-curable composition, when cured at a dose of about 4.4 mJ/cm<sup>2</sup>, has a percentage reacted acrylate unsaturation of at least 60%.

27. (Original) The radiation-curable composition of claim 23, wherein said radiation-curable composition, when cured at a dose of about 4.4 mJ/cm<sup>2</sup>, has a percentage reacted acrylate unsaturation of at least 66%.

Application No. 10/972,203  
Amendment dated April 14, 2005  
Page 7

28. (Original) The radiation-curable composition of claim 23, wherein said composition is an outer primary coating composition for optical fibers.
29. (Original) The radiation-curable composition of claim 23, wherein said oligomer comprises a polyether oligomer and a polyester oligomer.
30. (Previously presented) A radiation-curable composition comprising
- (A) an oligomer,
  - (B) a reactive diluent, and
  - (C) a photoinitiator package of at least two free radical photoinitiators having an overall absorption spectrum in methanol which is the sum of the absorption spectra of each individual photoinitiator wherein said overall absorption spectrum has a minimum value of a molar extinction coefficient ( $\epsilon$ ) in a range between 280 nm ( $\lambda_1$ ) and 320 nm ( $\lambda_2$ ) of at least about  $525 \text{ l mol}^{-1} \text{ cm}^{-1}$  or wherein said overall absorption spectrum has an average value of  $\epsilon$  in a range between 280 nm ( $\lambda_1$ ) and 320 nm ( $\lambda_2$ ) of at least about  $980 \text{ l mol}^{-1} \text{ cm}^{-1}$ .
31. (Previously presented) A radiation-curable composition according to claim 30 wherein the overall absorption spectrum in methanol of the photoinitiators in the range between 280 nm ( $\lambda_1$ ) and 320 nm ( $\lambda_2$ ), has a minimum value of  $\epsilon$  of at least about  $600 \text{ l mol}^{-1} \text{ cm}^{-1}$  or an average value of  $\epsilon$  of at least about  $1200 \text{ l mol}^{-1} \text{ cm}^{-1}$ .
32. (Previously presented) A radiation-curable composition according to claim 30, wherein the overall absorption spectrum of the photoinitiator package shows a peak or shoulder in the range between 280 and 320nm.
33. (Previously presented) A radiation-curable composition comprising:
- (A) an oligomer,
  - (B) a reactive diluent, and;
  - (C) at least three free radical photoinitiators wherein

Application No. 10/972,203  
Amendment dated April 14, 2005  
Page 8

- (i) at least one of the photoinitiators has an absorption spectrum in acetonitrile having a difference between two absorption maxima in the range between 240 and 360 nm of at least about 15 nm, and wherein
- (ii) considering at least two of the photoinitiators (1 and 2), the difference between the absorption maximum of the absorption spectrum in acetonitrile of photoinitiator 1 and the absorption maximum of the absorption spectrum in acetonitrile of photoinitiator 2 in the range between 280 and 320 nm is at least about 5 nm.

34. (Previously presented) A radiation-curable composition according to claim 30, wherein at least one of the photoinitiators contains a phosphorous, sulfur or nitrogen atom.

35. (Previously presented) A radiation-curable composition according to claim 30, wherein the photoinitiator package comprises at least a combination of a photoinitiator containing a phosphorous atom and a photoinitiator containing a sulfur atom.

36. (Previously presented) A radiation-curable coating composition for optical glass fiber comprising:

- (A) an oligomer;
- (B) a reactive diluent; and
- (C) at least four different photoinitiators.

37. (Previously presented) A radiation-curable coating composition according to claim 30, wherein the total amount of compound (C) is between about 0.10 and about 20.0 wt. % relative to the total amount of the coating composition.

38. (Previously presented) A radiation-curable coating composition according to claim 36, wherein the photoinitiators are each individually present in an amount between about 0.03 and about 10.0 wt. % relative to the total amount of the coating composition.

Application No. 10/972,203  
Amendment dated April 14, 2005  
Page 9

39. (Previously presented) A radiation-curable coating composition according to claim 38 wherein each photoinitiator is present in an amount between about 0.05 wt.% and about 4.0 wt.%.

40. (Previously presented) A radiation-curable coating composition according to claim 30, wherein the photoinitiators are free radical photoinitiators.

41. (Previously presented) A radiation-curable coating composition according to claim 40 wherein at least two of the photoinitiators are homolytic free radical photoinitiators.

42. (Previously presented) A radiation-curable coating composition according to claim 40 wherein at least two of the photoinitiators are  $\alpha$ -cleavage homolytic free radical photoinitiators.

43. (Previously presented) A radiation-curable coating composition according to claim 42 wherein component (C) comprises at least a combination of a photoinitiator containing a phosphorus atom and a photoinitiator containing a sulfur atom.

44. (Previously presented) A radiation-curable coating composition according to claim 43 wherein at least one of the photoinitiators is oligomeric.

45. (Previously presented) A radiation-curable coating composition according to claim 30, wherein compound (C) comprises five different  $\alpha$ -cleavage homolytic free radical photoinitiators, wherein each photoinitiator is individually present in an amount between 0.05 and 4.0 wt. % relative to the total amount of the coating composition.

46. (Previously presented) A radiation-curable coating composition according to claim 45 wherein each photoinitiator is present in an amount between 0.1 and 2.5 wt.% relative to the total amount of the coating composition.

Application No. 10/972,203  
Amendment dated April 14, 2005  
Page 10

47. (Previously presented) A radiation-curable coating composition according to claim 30, wherein component (A) is a urethane (meth)acrylate oligomer.
48. (Previously presented) A radiation-curable coating composition according to claim 30, wherein the coating, when cured, is an inner primary coating.
49. (Previously presented) A radiation-curable coating composition according to claim 30, wherein the coating, when cured, is an outer primary coating.
50. (Previously presented) A radiation-curable coating composition according to claim 30, wherein the coating, when cured, is matrix or bundling material.
51. (Previously presented) A radiation-curable coating composition according to claim 48, wherein the composition is colored.
52. (Previously presented) A cured coating derived from a composition according to claim 30, wherein the composition is cured with a lamp having at least 6% of its emission in the range between 280 and 320 nm.
53. (New) The composition of claim 1, wherein said composition, when cured at a dose of about 4.4 mJ/cm<sup>2</sup>, has a percentage reacted acrylate unsaturation of at least 56%.
54. (New) The composition of claim 1, wherein said composition, when cured at a dose of about 4.4 mJ/cm<sup>2</sup>, has a percentage reacted acrylate unsaturation of at least 60%.
55. (New) The composition of claim 1, wherein said composition, when cured at a dose of about 4.4 mJ/cm<sup>2</sup>, has a percentage reacted acrylate unsaturation of at least 66%.
56. (New) The composition of claim 30, wherein said composition, when cured at a dose of about 4.4 mJ/cm<sup>2</sup>, has a percentage reacted acrylate unsaturation of at least 56%.

Application No. 10/972,203  
Amendment dated April 14, 2005  
Page 11

57. (New) The composition of claim 30, wherein said composition, when cured at a dose of about 4.4 mJ/cm<sup>2</sup>, has a percentage reacted acrylate unsaturation of at least 60%.

58. (New) The composition of claim 30, wherein said composition, when cured at a dose of about 4.4 mJ/cm<sup>2</sup>, has a percentage reacted acrylate unsaturation of at least 66%.